Combine Settings for Drought

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Abstract
Hot mid-summer field conditions are affecting upcoming harvest. Although soybeans are still developing, corn ear diameter has been established in most fields. Smaller ear diameter and, in some fields, weaker stalks at the base of the corn plant and at the ear shank will affect harvest operations.

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Dry Field Conditions Increase Harvest Fire Risks

By Mark Hanna, Department of Agricultural and Biosystems Engineering

Silage harvest is beginning in some areas. It’s always difficult to forecast weather, but if dry field conditions persist, potential for combine and field fires will increase. A high-temperature source in the engine area or an overheated bearing can ignite dry plant material.

Warm, dry winds rapidly dry plant materials. With potential for an earlier maturing crop and resulting early harvest, air temperatures will likely be warmer than during typical October conditions. Farmers in northwest Iowa experienced a greater than average number of harvest fires during 2011. A recent study by South Dakota State University ag engineers found an average of nearly seven combine fires per county in nine northwest Iowa counties. Although air temperatures were warm and relative humidity was low during much of early harvest, most fires occurred on days with wind speeds averaging 15 mi/h and occasional gusts of 25 to 30 mi/h. This suggests that not only should combine operators be careful when field conditions are dry and air conditions are warm, they should be extra vigilant during windy periods.

A combine or field fire stops harvest quickly. During harvest periods with increased potential, fires cause millions of dollars in property damage in Iowa, including loss of machinery, crops and time.

Prevention is a key to avoiding problems, but preparation in case a fire breaks out is also necessary. Here are some tips for prevention:

- Keep the machine clean, particularly around the engine and engine compartment. Use a high pressure washer or compressed air to remove caked-on oil, grease and crop residue.
- Check coolant and oil levels daily.
- Check the pressurized oil supply line to the turbocharger for wear areas that rub and may start an oil leak.
- Frequently blow leaves, chaff and plant material from the engine area with compressed air or a portable leaf blower. Remove plant materials wrapped on or near bearings, belts or other moving parts.
- Examine exhaust or hot bearing surfaces. Repair leaking fuel or oil hoses, fittings or metal lines immediately.
- Inspect and clean ledges or recessed areas near fuel tanks and lines.

In case of fire, carry a cell phone to call the fire department. Two ABC-type fire extinguishers are recommended: a smaller 10-pound unit in the cab and a larger 20-pound extinguisher at ground level on the combine. Invert and shake the extinguishers once or twice a season to ensure machine vibrations don’t compact the powder inside. A shovel to throw dirt can also help.

Fires may start from plant materials that have smoldered unnoticed for 15 to
increased harvest fire risks

30 minutes or more. The ignition source for field fires may have been the earlier passing of a truck, tractor or combine. Flames aren’t apparent until additional oxygen is supplied, perhaps by a gust of wind. Harvest crews may want to discuss a plan for emergency tillage of a fire break should that option become advisable. Keep in mind that personal safety is more important than property loss.

With current prospects for an early, dry harvest, fire prevention measures will be more important than usual.

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